

Assessment test AS Computer Science 19/09/2023

Unit 1 Components of a computer

Name:

Block

Mark: /60 Grade:

1. A processor contains a number of special registers.

(a) Explain the function of each of the following and describe how they are used:

(i) The program counter (PC)

[2]

(ii) The current instruction register (CIR)

[2]

(b) Name and describe the function of **three** buses used to carry information between the special registers.

[6]

2. a) A low-cost von Neumann machine has an address bus of 16 bits. In this computer, a unit of addressable memory is two bytes. How many KiB of addressable memory can be used?

[2]

b) (i) Explain the basic difference between von Neumann architecture and Harvard architecture.

[2]

(ii) Why is Harvard architecture potentially able to achieve higher processing speeds than von Neumann architecture?

[1]

(iii) Give a typical use of each type of architecture.

[2]

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3. (a) Describe the differences between a graphics processing unit (GPU) and a quad-core computer in a personal computer. [4]
- (b) Name **two** other applications, apart from graphics processing, for which a GPU, used in conjunction with a CPU, may be used. [2]
4. (a) Describe **three** factors which affect the performance of the CPU. [6]
- (b) Describe **two** differences between CISC and RISC architecture. [4]
5. A credit card company is trialling a new system of using a camera phone instead of a password to verify and authenticate a customer's identity when they make an online purchase.
- (a) Describe how this system might work. [3]
- (b) Describe **two** advantages of using this system rather than using a password. [2]
- (c) Describe **two** possible drawbacks of this system. [2]

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6. A list of storage devices is given below.

CD-ROM	DVD	Hard Disk	USB Flash Memory stick
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Using the table below, state the typical capacity of each of the above devices.

[4]

Typical capacity	Storage medium
512 Megabytes – 128 Gigabytes	
512 Gigabytes – 4 Terabytes	
600 Megabytes – 700 Megabytes	
2.8 Gigabytes – 4.7 Gigabytes	

7. Describe the FETCH phase of the Fetch/Decode/Execute cycle mentioning any registers and buses and how they are used.

[6]

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8. (a) Computer software is used in Geography lessons to teach students about weather systems
- (i) State the purpose of an input device in a computer system when using this software. [2]
- (ii) State the purpose of an output device in a computer system when using the software. [2]
- (b) State, with reasons, what type of printer you would recommend for the following applications.
- (i) Invoice/delivery note printed on 3-part paper with 2 carbon copies. [2]
- (ii) Flyers produced by a small window-cleaning business to be delivered to all homes in a particular area [2]
- (iii) Producing high quality prints of a set of photographs [2]

[Total 60 Marks]